

MEMORANDUM FOR: Distribution

FROM: W/OPS1 - John McNulty

SUBJECT: Expansion of Console Replacement System (CRS)

1. Material Transmitted:

Engineering Handbook No. 7 (EHB-7), Communications Equipment, Section 3.4, Modification Note 52, Console Replacement System Output Channel Expansion (Large 5 to a Large 8).

2. Summary:

Request for Change CRH694R1 authorizes CRS expansion for Weather Forecast Office (WFO) Pleasant Hill, Missouri (EAX).

3. Effect on Other Instructions:

None

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COMMUNICATIONS EQUIPMENT MODIFICATION NOTE 52 (for Electronics Technicians)

Maintenance Branch

W/OPS12: GSS

SUBJECT : Console Replacement System (CRS) Output Channel Expansion

PURPOSE : To expand the capabilities of the CRS system from a Large 5-channel to a Large 8-channel configuration.

SITES : Site Name SID Org. Code
AFFECTED WFO Pleasant Hill, MO EAX WR9446

EQUIPMENT : CRS (B440)
AFFECTED

PARTS REQUIRED : The parts required will be issued to the site by W/OPS12 from the National Logistics Support Center under the applicable approved site-specific Request for Change.

(4) DECtalk cards (ASN: B440-2A2A11)
(3) Audio switch module (ASM) cards (ASN: B440-2A6A3)
(3) DECtalk-ASM audio cables (ASN: B440-4W12)
(3) NOAA Weather Radio Specific Area Message Encoder (NWRSAME) Audio Control Panel (ACP) interface cables (ASN: B440-1A5W4)
(1) DOS formatted diskette with CRS test database ASCII files (provided by W/OPS12)

PARTS SUPPLIED : The following parts shall be provided by the site:
BY THE SITE (3) Transmitter audio output cables
(3) NWRSAMEs (if available)
Cable marking tags, as needed

TOOLS AND : #1 and #2 Phillips screwdrivers
TEST EQUIPMENT : CRS test database ASCII files diskette provided by W/OPS12
REQUIRED (see Parts Required)
Small flat-blade jeweler's screwdriver
Root mean square (RMS) voltmeter/dB meter
600-ohm dummy load with a RJ-11 plug attached
Antistatic workstation kit

TIME REQUIRED : 5 Hours

EFFECT ON OTHER : None.
INSTRUCTIONS

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Issuance 01-12

05/30/01

- AUTHORIZATION : The authority for this modification is Request for Change CRH694R1.
- VERIFICATION STATEMENT : This procedure was tested and verified at the National Weather Service Headquarters, Silver Spring, MD (SLVM2).
- GENERAL : The attachments to this procedure provide instructions for adding output channels.
- PROCEDURE : Attachment **A** provides procedures for implementing this modification. Attachment **B** (CRS Hardware Drawings) provides reference information. Attachment **C** provides verification of the new physical configuration (used before applying power). Attachment **D** provides a completed sample of WS Form A-26, Maintenance Record.
- REPORTING INSTRUCTIONS : Report the completed modification on WS Form A-26, according to the instructions in Engineering Handbook No. 4 (EHB-4), Engineering Management Reporting System (EMRS), Part 2, and Appendix I. Include the following information on the WS Form A-26:
- a. An equipment code of **CRSSA** in block 7
 - b. A serial number of **001** in block 8
 - c. A Mod No. of **52** in block 17a

A completed sample WS Form A-26 is provided as attachment **D**.

John McNulty
Chief, Maintenance, Logistics, and Acquisition Division

Attachment A - Modification Procedure
Attachment B - CRS Hardware Drawings
Attachment C - New Configuration Physical Verification
Attachment D - WS Form A-26 Sample

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Issuance 01-12
05/30/01

Attachment A

Modification Procedure

Attachment A Modification Procedure

Overview

This modification note provides instructions for expanding a Console Replacement System (CRS) from a LARGE 5-channel configuration to a LARGE 8-channel configuration. The modification procedure contains seven parts:

1. CRS Power-Down Procedures
2. Equipment Upgrade Procedures
3. CRS Power-Up Procedures
4. CRS Login, Application Software Error Verification, and Test Database ASCII File Loading Procedures
5. Post Hardware Expansion Channel Operability Verification Procedures
6. Adding New Transmitter Channels and Editing Site Database ASCII File Procedures
7. ASM Alignment Procedures

NOTE:

1. Read the entire procedure and verify receipt of all required parts before proceeding with the actual modification.
2. Coordinate with the operations staff before performing this procedure.

CAUTION

CRS must be down to perform the expansion modification. This modification contains test messages that should not be broadcast on any transmitter.

In addition, the site database ASCII file will be recompiled and all dictionary files will be lost! Switch to backup NWR system and ensure the dictionary files are backed up (see the *CRS System Administration Manual*) before performing this modification.

PART 1 - CRS POWER-DOWN PROCEDURES

1.1 CRS Application Shutdown Procedure

1. Click on the **System** menu and click on **Stop System**.
2. Wait until all icons on the *CRS System Status* menu turn **red**.

1.2 UNIX Shutdown Procedure

NOTE: 1. The shutdown of the CRS application is just one task before the graceful power-down. After closing the CRS application software, implement a “controlled/orderly UNIX shutdown with NO automatic reboot” on the main processor (MP), and implement a “controlled/orderly UNIX shutdown” on all FEPs. Upon completion of the controlled/orderly UNIX shutdown, power-down the processors in the following order: MPs first followed by the FEPs.

1. Click on the **Maintenance** menu in the main CRS menu to access the *Maintenance* pull-down menu.
2. Click on **UNIX Shell** in the *Maintenance* pull-down menu. A *UNIX xterm* window pops up for the entry of UNIX commands.
3. Type the following UNIX command in the *xterm* window:
su root
4. Press the **Enter** key. The shell responds with a prompt to enter root passwords.
5. Type the password for the root.
6. Press the **Enter** key. The shell prompt changes to a pound sign indicating all subsequent UNIX command entries have root authority.
7. Type the following UNIX command in the *xterm* window:
rsh 5MP /sbin/shutdown -i0 -g0 -y
8. Press the **Enter** key. The shell command prompt returns, after displaying a confirmation of shutdown initiation on 5MP. UNIX on processor 5MP shuts down.
9. Type the following UNIX command in the *xterm* window:
rsh 1FEP /sbin/shutdown -i0 -g0 -y
10. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 1FEP. UNIX on processor 1FEP shuts down.

11. Type the following UNIX command in the *xterm* window:
rsh 2FEP /sbin/shutdown -i0 -g0 -y
12. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 2FEP. UNIX on processor 2FEP shuts down.
13. Type the following UNIX command in the *xterm* window:
rsh 4BKUP /sbin/shutdown -i0 -g0 -y
14. Press the **Enter** key. The shell command prompt returns after displaying a confirmation of shutdown initiation on 4BKUP. The UNIX on processor 4BKUP shuts down.
15. Type the following UNIX commands in the *xterm* window:
 - a. **cd /**
 - b. Press the **Enter** key.
 - c. Type **/sbin/shutdown -i0 -g0 -y**.
 - d. Press the **Enter** key. Each CRS processor for the system may be safely powered-down when UNIX indicates shutdown is complete with the following message:
Press any key to reboot...

NOTE: 2. Do not reboot any machine, go to section 1.3.

1.3 CRS Hardware Power-Down Procedure

Power-down all CRS equipment at the operator's station and in the equipment room by turning off the following:

<u>Operators Station</u>	<u>Equipment Room</u>
0MP and Monitor	4BKUP
5MP and Monitor	1FEP
NWRSAME (all)	2FEP
	LAN Bridge
	LAN Server
	Monitor
	Printer
	Audio switching assembly (ASA) power supplies
	Modem

PART 2 - EQUIPMENT UPGRADE PROCEDURES

NOTE: The removal and replacement of circuit cards must be accomplished in an antistatic work area using approved antistatic procedures.

2.1 1FEP, 2FEP, and 4BKUP DECtalk Card Installation Procedure

1. Remove all cabling from 1FEP, 2FEP, and 4BKUP; and remove FEPs from the equipment rack to the antistatic work area (see attachment **B**, figure A-5).
2. Remove and retain the screws holding the following expansion slot covers:
 - ! 1FEP slot cover 5
 - ! 2 FEP slot covers 4 and 5
 - ! 4BKUP slot cover 5
3. Remove the covers.
4. Install the DECtalk cards into slot 5 of both the 1FEP and 4BKUP units, and into slots 4 and 5 of 2FEP, using the following steps:
 - a. Access the DECtalk cards by removing the right three screws located on the back of the system unit. These screws secure the right side access panel of the system to the chassis (see attachment **B**, figure A-1).
 - b. Pull the panel backward and lift upward.

2.2 1FEP, 2FEP, and 4BKUP DECtalk Card Configuration for the Appropriate Input/Output (I/O) Address Procedure

1. Configure the new DECtalk card(s) for the appropriate I/O address through switch 2 (SW2), as defined in table 1 and pictured in attachment B, figure A-11.

NOTE: 1. Depending on the CRS site configuration, there may be as many as five DECtalk cards per front-end processor, located in slots two through six.

Table 1. DECtalk Card Switch 2 (SW2) Settings

Module Number	SW2-1	SW2-2	SW2-3	SW2-4	SW2-5	SW2-6	I/O Address	PC Slot
4	off	off	off	off	on	on	380	6
3	off	off	on	on	off	on	360	5
2	on	off	on	off	off	on	328	4
1	off	on	off	on	off	off	250	3
0	off	off	off	on	off	off	240	2

NOTE: 2. Regardless of FEP, DECtalk card configuration remains constant; therefore, modules 0, 1, 2, 3, and 4 are configured the same for each FEP.

2. Use table 1 to set up a DECtalk card with the I/O address: 360
Install the DECtalk card into slot 5 of 1FEP and reinstall a retaining screw.
3. Use table 1 to set up a DECtalk card with the I/O address: 360
Install the DECtalk card into slot 5 of 4BKUP and reinstall a retaining screw.
4. Use table 1 to set up a DECtalk card with the I/O address: 328
Install the DECtalk card into slot 4 of 2FEP and reinstall a retaining screw.
5. Use table 1 to set up a DECtalk card with the I/O address: 360
Install the DECtalk card into slot 5 of 2FEP and reinstall a retaining screw.
6. Replace 1FEP, 2FEP and 4BKUP right side covers using the reverse procedure in section 2.1, step 4.
7. Replace 1FEP, 2FEP and 4BKUP in the CRS Main Unit Cabinet.
8. Reconnect all cabling to 1FEP, 2FEP, and 4BKUP with the exception of the DECtalk to ASM/ASC audio cables.

2.3 ASM Card Installation Procedure

1. Remove ASA slot 6, 7, and 8 covers by removing the two screws.

NOTE: There are five jumpers to be set on each ASM card.

2. Take one of the new ASM cards (ASN: B440-2A6A3) and set the jumpers for slot 6 of the ASA according to table 2.
3. Install the new ASM card into slot 6 of the ASA chassis and tighten the two screws.
4. Repeat steps 2 and 3 for each of the remaining ASM cards.

Table 2. ASM Card Jumper Settings

	ASA Slot #	Silence Alarm Jumper "JP1"	ACP Channel Sel. Jumper "JP2" & "JP3"	BKUP Live/ Playback Cntrl Jumper "JP4"	FEP Select Jumper "JP5"
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	FEP1
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	FEP1
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	FEP1
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	FEP1
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	FEP2
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	FEP2
ASM 7 (channel 7)	7	EN (Enable)	7	BUL2	FEP2
ASM 8 (channel 8)	8	EN (Enable)	8	BUL2	FEP2
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	FEP1
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	FEP2

2.4 Operational and Spare ASC Jumper Setting Procedure

1. Disconnect five DECTalk-ASC audio cables (labeled as "4-1", "4-2", "4-3", and "4-5").
2. Disconnect the two ACP-ASC audio cables.
3. Disconnect the ASC-4BKUP parallel port interface cables.
4. Disconnect the two ACP-ASC control cables.
5. Loosen the four front panel screws and extract the ASC card.
6. On both the operational and spare ASC, set the backup channel configuration using the 7 jumpers on JP1. Using all seven jumpers, move the jumpers to the side of the block that lists the number of output channels for your site configuration, the center row of pins being common. Example: Using **Figure 1** as a reference, if your site configuration had 5, 6, 9, or 10 transmitters, each jumper would connect from the center row of pins to the top row of pins. If your site configuration had 1, 2, 3, 4, 7, 8, 11, 12, or 13 transmitters, each jumper would connect from the center row of pins to the bottom row of pins.

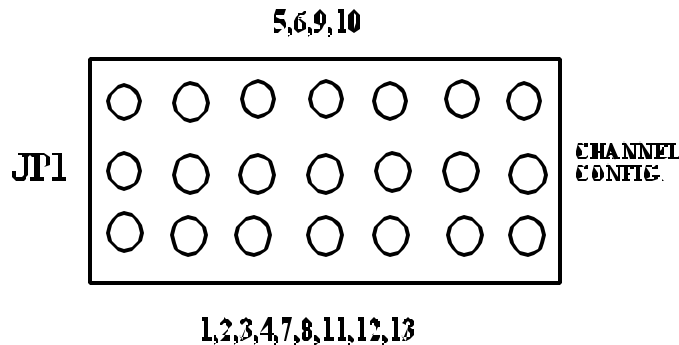


Figure 1. ASM Card Jumper Block

7. Insert the ASC back into the ASA and tighten the four front panel screws.
8. Reconnect the two ACP-ASC control cables.
9. Reconnect the ASC-4BKUP parallel port interface cable.
10. Reconnect the two ACP-ASC audio cables.
11. Reconnect the existing DECTalk-ASC audio cables (labeled as "4-1", "4-2", "4-3", and "4-5"). Using write-on cable labels, mark and connect the new DECTalk-ASC cable as 4-4.

2.5 DECtalk-ASM/ASC Audio Cable Installation Procedure

Using write-on cable labels, mark and connect the new and existing DECtalk-ASM/ASC audio cables on 1FEP, 2FEP, and 4BKUP according to tables 3 and 4.

Table 3. DECtalk to ASM Audio Cables

From	To	Cable Label
1FEP DECtalk 1 "J2" Port	ASM 1 "IN Port"	1-1
1FEP DECtalk 2 "J2" Port	ASM 2 "IN Port"	1-2
1FEP DECtalk 3 "J2" Port	ASM 3 "IN Port"	1-3
1FEP DECtalk 4 "J2" Port	ASM 4 "IN Port"	1-4
2FEP DECtalk 1 "J2" Port	ASM 5 "IN Port"	2-1
2FEP DECtalk 2 "J2" Port	ASM 6 "IN Port"	2-2
2FEP DECtalk 3 "J2" Port	ASM 7 "IN Port"	2-3
2FEP DECtalk 4 "J2" Port	ASM 8 "IN Port"	2-4
1FEP DECtalk 5 "J2" Port	ASM PB1 "IN Port"	1-5
2FEP DECtalk 5 "J2" Port	ASM PB2 "IN Port"	2-5

Table 4. DECtalk to ASC Audio Cables

From	To	Cable Label
4BKUP DECtalk 1 "J2" Port	ASC "BKUP Audio 1" Port	4-1
4BKUP DECtalk 2 "J2" Port	ASC "BKUP Audio 2" Port	4-2
4BKUP DECtalk 3 "J2" Port	ASC "BKUP Audio 3" Port	4-3
4BKUP DECtalk 4 "J2" Port	ASC "BKUP Audio 4" Port	4-4
4BKUP DECtalk 5 "J2" Port	ASC "BKUP Audio 5" Port	4-5

2.6 New Transmitter Audio Output Cables Installation Procedure

1. Connect the OUT1 port of the new ASM card at slots 6, 7, and 8 of the ASA chassis by installing the new audio output cable to the Demarc Panel position for the new transmitters.
2. Install the new NWRSAME (if available) to the top panel of the 5MP workstation (if available).
3. Install the NWRSAME-ACP interface cable from the NWRSAME rear connector to the "NWRSAME INPUT 1" port of ACP2 rear panel (this connects to pins 2, 6, 7, 9, and 10 of the NWRSAME), if available.

NOTE: This completes the hardware modification.

PART 3 - CRS POWER-UP PROCEDURES

WARNING

Prior to powering-up the FEPs, perform the *New Configuration Physical Verification* procedure contained in attachment C to verify proper system configuration. Failure to perform the procedure, can result in the assignment of transmitter broadcasts to incorrect output channels.

3.1 Power-Up FEP Procedure

1. Press the **ON/OFF** switch (on the front center right of the enclosure) to power-up the FEPs. A green power LED on each FEP indicates power is on. The FEPs can be powered-up in any sequence. The FEPs go through a memory check, file system check, system configuration verification [as recognized by the basic I/O (BIOS)], and boot the embedded UNIX operating system. At the completion of the boot process, the console screen displays the prompt:

Console Login:

The embedded operating system automatically initializes to a pre-set level and then waits for final start-up commands from the master MP.

NOTE: The FEPs share a common console through the *Shared Monitor Switch*. The console displays messages while completing the boot process of the FEP currently switched in.

2. Use the *Shared Monitor Switch* to select the next **FEP**. The console monitor displays:
Press <F1> to resume, <F2> to Setup.
3. Press **F1** to complete the boot process. The prompt displays:
Console Login:
4. Repeat for each remaining FEP.

3.2 Power-Up Main Processors Procedure

NOTE: 1. Power-up 0MP as the master main processor and 5MP as the shadowing processor.

Press the **ON/OFF** switch (on the front center right of the enclosure) to power-up the MPs. A lit green power LED on each MP indicates power is on. The MPs can be powered-up in any sequence. The MPs go through a memory check, file system check, system configuration verification (as recognized by the BIOS), and boot the embedded UNIX operating system. At the completion of the boot process, the workstation screen displays the CRS Login screen. The MPs are now ready for the initialization of the CRS application software.

NOTE: 2. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.

3. Whenever the MPs are powered-up, they automatically step through the boot process to the multiuser mode without operator intervention.

PART 4 - CRS LOGIN AND TEST DATABASE ASCII FILE LOADING PROCEDURES

4.1 CRS Login Procedure

NOTE: 1. For Build 6.4 and higher: Following power-up, CRS displays the *Security Screen*. To continue the login process, click the **Acknowledge** button.

2. The CRS Login Screen allows you to log onto CRS. This screen contains two fields, i.e., Login ID and Password. The fields are provided to allow you to type in your assigned login ID and password.

1. Type **admin** (for system administrator) in the *Login ID* field and press **Enter**. The cursor moves to the *Password* field.

2. Type your assigned password and press **Enter** to complete the CRS login process. The system displays the CRS main display. In addition, the system displays the following error message:
System is not operational. Perform 'Start CRS' to start system.
3. Click on **OK** to clear the message.

NOTE: 3. The error message is only a status message indicating that CRS is not running.

4.2 CRS Test Database ASCII File Loading Procedure

NOTE: 1. The following instructions for loading the CRS test database ASCII assume everything is processed with OMP set as the MP.

1. Open a UNIX Shell.
 - a. Click on **Maintenance**.
 - b. Click on **UNIX Shell**.
2. Place the diskette with CRS test database ASCII files in the OMP diskette drive to copy the desired file from the diskette to CRS.
 - a. Type **dosdir a:** and press the **Enter** key to display a directory listing of the files on the test database diskette. There are 13 files on the diskette with the following filename convention:

TYP W_CFG.ASC	where W = 1 - 4
LRGX_CFG.ASC	where X = 5 - 8
MAX Y_CFG.ASC	where Y = 9
MAXZ_CF.ASC	where Z = 10 - 13

(W, X, Y, and Z represent the number of transmitters supported by your CRS)
 - b. Locate the applicable test database ASCII file.
 - c. Type **doscpc a:filename /crs/data/SS/filename** (where filename is the name of the CRS test database ASCII file to be used).
 - d. Press **Enter**.
3. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the **XCRS_SITE Utility** window.
4. Click on the **Select ASCII Site Setup** button to bring up the list of ASCII files.
5. Select the desired database ASCII filename you copied from the diskette in section 4.2, step 2.c, and double click.

NOTE:

2. The directory selection block has a default directory name of `/crs/data/SS`, and the file filter block has a default file name of `/crs/data/SS/*.ASC`. If the desired filename does not appear, it may have copied to the wrong directory in section 4.2, step 2.c. If that is the case, change the default directory name to the directory specified in section 4.2, step 2.c. The other reason the filename does not appear is because it is being filtered out. Remember, UNIX is case sensitive and if copied with an asc extension in lower case, the file does not display. Change the filter file name to `/crs/data/SS/*.asc`, and the filename displays.
6. Select Initialize **System Configuration** and **Database** to ensure the entire system database and configuration is erased and replaced.
7. Click on the **Start Site Configuration** button. The system displays:
Will now perform FULL site reconfiguration. Continue?
8. Click on **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message reads:
Finished with site configure
The “wristwatch” and “working” message disappear. Ensure there are no error messages at the completion of the site configuration process.
9. Restart CRS by clicking on **Start CRS System**. The system displays:
The CRS system will be STARTED. Continue?
10. Click on **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message refers to starting 4BKUP. The “wristwatch” and “working” message disappear.
11. Click on **Exit** to close the *XCRS_SITE Utility* window.
12. Click on the UNIX shell window to select it. At the prompt, type **Exit** and press **Enter** to close the UNIX Shell.
13. Open the *System Status* window.
 - a. Click on **System**.
 - b. Click on **System Status**.
14. Monitor the *System Status* window and ensure the system is operational.

PART 5 - POST HARDWARE EXPANSION CHANNEL OPERABILITY VERIFICATION PROCEDURES

5.1 Channel Operability Verification Procedure

NOTE: The CRS test database ASCII files contain test messages configured for continuous broadcast for channel operability verification.

1. Connect a monitor speaker or headphones to the ACP.
2. Using the *Channel Select* control, select each channel, one at a time, and monitor the output for the correct message (i.e., with *Channel one* selected, the message output is: *This is transmitter one, audio switch module one*).

5.2 FEP Backup Mode Channel Operability Verification Procedure

1. Click on **Maintenance**.
2. Click on **Front-End Processor Switch**.
3. Select **1** in the *Front-End Processor Switch* window under FEP.
4. Select **Out** under *Switch*.
5. Select **Yes** under *Backup*.
6. Click on the **Save the current record** icon to execute the FEP switch process. The question window displays:
Switch out the FEP FULLY offline ???
7. Click **OK** to continue. The system displays the “wristwatch” and the message:
“Requesting FEP Switchout.”
8. Monitor the **FEP1** and **BKUP System Status** icons to verify FEP1 is in backup mode and the BKUP icon displays the online status.
9. Upon completion of the FEP switch process, repeat section 5.1 steps 1 and 2.
10. Upon completion of the FEP backup mode channel operability verification, perform the following to display the *Front-End Processor Switch* window:
 - a. Click on **Maintenance**.
 - b. Click on **Front-End Processor Switch**.
11. In the *Front-End Processor Switch* window under FEP: select **1**.
12. Under *Switch*: select **IN** to switch FEP1 back in.

13. Click on the **Save the current record** icon to execute the FEP switch process. The system displays the “wristwatch” and the message:
Requesting FEP switch-in...
14. Monitor the **FEP1** and **BKUP System Status** icons and verify **FEP1** is online and the **BKUP** icon displays the backup mode status.
15. When the system returns to normal operation, perform the following steps to close the *Front-End Processor Switch* window and stop CRS:
 - a. On the *Front-End Processor Switch* window:
 - 1) Click on **File**.
 - 2) Click on **Exit**.
 - b. On the *Main CRS* menu:
 - 1) Click on **System**.
 - 2) Click on **Stop System**.
 - 3) Click on **OK**.
 - 4) Click on **Close**.
16. Monitor the *System Status* window and verify the CRS application has stopped.

PART 6 - ADDING NEW TRANSMITTER CHANNELS AND EDITING SITE DATABASE ASCII FILE PROCEDURES

6.1 Adding New Transmitter Channels Procedure

1. Click and hold the left mouse button on any white space, move the cursor to select **XCRS_SITE Utility**, and release the button to bring up the **XCRS_SITE Utility** window.
2. Click on the **Select ASCII Site Setup** button to bring up the list of ASCII files.
3. Select the current site database ASCII file and double click.
4. Click on **Add Transmitter(s)** button to start the **addxmt** program. It displays how many transmitters currently are available, the next available transmitter to be added, and its appropriate processor and slot.
5. Use the following steps to add a new transmitter to the *Site Database ASCII* file:
 - a. **Mnemonic**
 - 1) Type option number **1** and press **Enter** to select the *Mnemonic*.
 - 2) Type **a** and press **Enter** at the program prompt to add the *Mnemonic*.

- 3) Type **mmmmm** and press **Enter** (where mmmm is the desired *Mnemonic*), up to a length of 5 characters. The program returns the *Mnemonic*.
 - 4) Type **0** or press **Tab** and press **Enter** to complete the *Mnemonic* selection.
- b. **Call Sign**
- 1) Type option number **2** and press **Enter** to select the *Call Sign*.
 - 2) Type **a** and press **Enter** at the program prompt to add *Call Sign*.
 - 3) Enter the *Call Sign* in the same manner as the *Mnemonic*, up to a length of 5 characters. The program returns the *Call Sign*.
 - 4) Type **0** or press **Tab** and press **Enter** to complete the *Call Sign* selection.
- c. **Frequency**
- 1) Type option number **3** and press **Enter** to select *Frequency*. The *Frequency* option only allows a selection of one of the seven choices listed.
 - 2) Type **n** and press **Enter** (where **n** is the desired frequency choice). The program returns the *Frequency* choice by displaying an asterisk next to the *Frequency* selection.
 - 3) Type **0** or press **Tab** and press **Enter** to complete the *Frequency* selection.
- d. **Location**
- 1) Type option number **4** and press **Enter** to select the *Location*.
 - 2) Type **a** and press **Enter** at the program prompt to add the *Location*.
 - 3) Enter the *Location* (in the same manner as the *Mnemonic* and the *Call Sign*), up to a length of 40 ASCII characters. The program returns the *Location*.
 - 4) Type **0** or press **Tab** and press **Enter** to complete the *Location* selection.
- e. **Add Transmitter**
- 1) Type option number **5** and press **Enter** to use all the parameters defined in the first four steps to configure a new transmitter in the database ASCII file. The program verifies that a new transmitter is really needed.
 - 2) Type **y** and press **Enter**. The program returns the assignment of each transmitter to its proper processor and slot. The program tells you the appropriate database ASCII file has been updated and the original has been saved with the .SAV extension.

6. The program then asks if another channel is needed. If an additional channel is needed, repeat steps 5a through 5e for the next new transmitter. If not, type **n** and press **Enter** to exit the program.

6.2 Editing the Site Database ASCII File Procedure

1. When exit **addxmt** is done, the *Question* box displays:
Ready to recompile selected ASCII file. Continue?
2. Click on **Cancel** to close the *Question* box.
3. Select Initialize **System Configuration** and **Database** to ensure the entire system database and configuration are erased and replaced.
4. Click on **Start Site Configure**. The question box displays:
Will now perform FULL site reconfiguration. Continue?
5. Click on **OK** to recompile the database ASCII file. Upon completion of the database ASCII file recompile process, the system displays:
Finished with site configure.
6. Restart CRS by clicking on **Start CRS System**. The system displays:
The CRS system will be STARTED. Continue?
7. Click on **OK**. The “wristwatch” and the “working” message display. Several messages scroll by. The last message refers to starting 4BKUP and the “wristwatch” and “working” message disappear.
8. Click on **Exit** to close the *XCRS_SITE Utility* window.
9. Open the *Alert Monitor* window.
 - a. Click on **System**.
 - b. Click on **Alert Monitor**.

<p>NOTE: No attempt is made by addxmt to establish station identifiers, broadcast programs, broadcast suites, message types, voice parameters, keep alive messages, interrupt messages, etc. for the new transmitters. These must be configured through the CRS graphical user interface (see the <i>CRS Site Operator's Manual</i>) and updated in the site database ASCII file.</p>

PART 7 - ASM ALIGNMENT PROCEDURES

NOTE:

The output of each added ASM card must be aligned before placing in service. The alignments must be performed in the following sequence:

1. Verify ACP **Ref.** Mark Alignment.
2. ASM Card Alignment.

7.1 Verify ACP Ref. Mark Alignment Procedure

NOTE:

1. The ACP Ref. mark alignment can be performed independently and does not require the use of any tool or equipment.
2. Transmitter **x** in this procedure refers to the channel under testing.

1. Set up the CRS for BUL (backup live). No system database is required.
2. Set the index mark on the **tone volume control** knob to the **Ref.** position.
3. Push the **Transmitter x** and **Enable** buttons in sequence to start BUL on channel x. The buttons are located in the **BACKUP LIVE** block area on the ACP front panel.

NOTE:

3. Do not send audio to a transmitter while performing this procedure.

4. Push the **Alert Tone 1** button to generate the 1050 Hz warning alert tone (WAT).
5. Ensure the VU meter on the ACP front panel indicates **0 dBm**.

NOTE:

4. The duration of 1050 Hz WAT is 10 seconds.

6. Adjust the tone volume control for a reading of **0 dBm**.
7. Repeat steps 4, 5 and 6 as necessary to obtain a reading of **0 dBm**.

NOTE:

5. When the tone volume control is set to the true Ref. position, the ACP provides the selected WAT output level of **0 dBm**.

8. To stop BUL, first push the **Enable** button, then push the **Transmitter x** button.

7.2 ASM Card Alignment Procedure

NOTE:

1. This alignment requires two people: one in the operations room and one in the equipment room.
2. When performing any of the following alignments, the system's output(s) must be disconnected from the telecommunications link and terminated into a 600-ohm load. All audio signal level measurements are taken across the 600-ohm load.

1. Assemble the following required Equipment:
 - dB Meter to read the audio signal level
 - Small jeweler's screwdriver
 - 600-ohm dummy load with RJ-11 plug attached
2. Set up the CRS for BUL. No system database is required.
3. Set the index mark on the tone volume control knob to the **Ref.** position as described in section 7.1.
4. Push the **Transmitter x** and **Enable** buttons in sequence to start BUL on channel x. The buttons are located in the *BACKUP LIVE* block area on the ACP front panel.
5. Plug the RJ-11 connector (with the 600-ohm load attached) into the RJ-11 jack of **OUT1** on the ASM of transmitter **x** (output channel **x**).
6. Connect the dB meter across the 600-ohm load.
7. Push the **Alert Tone 1** button to send a WAT to the **OUT1** jack of ASM card 1.
8. Measure and record the signal level in dB across the 600-ohm load.
9. Using a small jeweler's screwdriver, adjust the transmitter gain control potentiometer through the ASM front panel until a reading of **0 dBm** is obtained across the 600-ohm load.

NOTE:

3. Table 5 provides equivalent V_{rms} and V_{p-p} values related to dBm (all referenced to 600-ohms) as an aid in referencing readings taken with measurement equipment that may not read directly in dBm.

Table 5. Voltages vs dBm (into 600-ohm load)

dBm	RMS	P-P	dBm	RMS	P-P	dBm	RMS	P-P
10	2.440	6.93	-4	0.480	1.35	-17	0.110	0.301
9	2.183	6.17	-5	0.430	1.20	-18	0.097	0.270
8	1.946	5.50	-6	0.390	1.03	-19	0.087	0.240

dBm	RMS	P-P		dBm	RMS	P-P		dBm	RMS	P-P
7	1.734	4.90		-7	0.345	0.96		-20	0.0775	0.215
6	1.546	4.37		-8	0.306	0.85		-21	0.690	0.194
5	1.377	3.89		-9	0.275	0.76		-22	0.061	0.170
4	1.228	3.47		-10	0.245	0.68		-23	0.054	0.152
3	1.094	3.01		-11	0.213	0.61		-24	0.048	0.135
2	0.975	2.75		-12	0.192	0.54		-25	0.043	0.120
1	0.869	2.46		-13	0.173	0.48		-26	0.039	0.108
0	0.775	2.15		-14	0.154	0.43		-27	0.034	0.096
-1	0.690	1.94		-15	0.138	0.38		-28	0.031	0.085
-2	0.610	1.70		-16	0.125	0.34		-29	0.028	0.076
-3	0.540	1.52						-30	0.024	0.068

- NOTE:**
4. The WAT output from the ACP nominally lasts 10 seconds. It is recommended that a second person push the **Alert Tone1** button for a near continuous tone output. This will smooth out the calibration effort and minimize the time required.
 5. Primary (Out1) and secondary (Out2) outputs are two independent outputs. However, the output level of Out1 is affected by approximately 1.5 dB if Out2 is loaded.
 6. During BUL, the VU meter monitors the ACP tone output, not the output of the ASM card. The ACP tone output is sent to the ASM card via the ASC for final output.

10. Repeat steps 7, 8 and 9 as necessary to obtain a reading of **0 dBm** for the channel under test.
11. To stop BUL, first push the **Enable** button, followed by the **Transmitter x** button.
12. Repeat steps 1 through 10 to align each of the new ASM cards in the system.
13. Remember to activate each ASM card output by pushing the respective **Transmitter x** button and **Enable** button.

Attachment C

New Configuration Physical Verification

Attachment C New Configuration Physical Verification

Large 8-Channel System

Required MPs, FEPs, DECtalks, ASC, and ASMs

The **LARGE 8** system has two MPs (0MP and 5MP), three FEPs (1FEP, 2FEP, and 4BKUP), 15 DECtalk cards, one ASC card, and 11 ASM cards:

0MP	main processor 1		
5MP	main processor 2		
1FEP	front end processor 1		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 1	(slot 2)
	DECtalk 2	channel 2	(slot 3)
	DECtalk 3	channel 3	(slot 4)
	DECtalk 4	channel 4	(slot 5)
	DECtalk 5	PB1	(slot 6)
2FEP	front end processor 2		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	channel 5	(slot 2)
	DECtalk 2	channel 6	(slot 3)
	DECtalk 3	channel 7	(slot 4)
	DECtalk 4	channel 8	(slot 5)
	DECtalk 5	PB2	(slot 6)
4BKUP	backup front end processor		
	LAN Card	LAN interface	(slot 1)
	DECtalk 1	backup channel 1 or 5	(slot 2)
	DECtalk 2	backup channel 2 or 6	(slot 3)
	DECtalk 3	backup channel 3 or 7	(slot 4)
	DECtalk 4	backup channel 4 or 8	(slot 5)
	DECtalk 5	backup PB1 or PB2	(slot 6)
ASA	audio switch assembly		

ASC	audio switch controller		
ASM 1	channel 1		(slot 1)
ASM 2	channel 2		(slot 2)
ASM 3	channel 3		(slot 3)
ASM 4	channel 4		(slot 4)
ASM 5	channel 5		(slot 5)
ASM 6	channel 6		(slot 6)
ASM 7	channel 7		(slot 7)
ASM 8	channel 8		(slot 8)
ASM PB1	monitor/playback channel 1		(slot PB1)
ASM PB2	monitor/playback channel 2		(slot PB2)
ASM Spare	spare		(slot S)

DECtalk Card Configurations

There is one I/O jumper to be set on each DECtalk card:

	FEP Name	FEP Slot #	I/O Address Jumper
1FEP DECtalk 1 (channel 1)	FEP1	2	240
1FEP DECtalk 2 (channel 2)	FEP1	3	250
1FEP DECtalk 3 (channel 3)	FEP1	4	328
1FEP DECtalk 4 (channel 4)	FEP1	5	360
1FEP DECtalk 5 (mon/playback chan 1)	FEP1	6	380
2FEP DECtalk 1 (channel 5)	2FEP	2	240
2FEP DECtalk 2 (channel 6)	2FEP	3	250
2FEP DECtalk 3 (channel 7)	2FEP	4	328
2FEP DECtalk 4 (channel 8)	2FEP	5	360
2FEP DECtalk 5 (mon/playback chan 2)	2FEP	6	380
4BKUP DECtalk 1	4BKUP	2	240
4BKUP DECtalk 2	4BKUP	3	250
4BKUP DECtalk 3	4BKUP	4	328
4BKUP DECtalk 4	4BKUP	5	360
4BKUP DECtalk 5	4BKUP	6	380

ASM Card Configurations

There are five jumpers to be set on each ASM card:

	ASA Slot #	Silence Alarm Jumper "JP1"	ACP Channel Sel. Jumper "JP2" & "JP3"	BKUP Live/ Playback Cntrl Jumper "JP4"	FEP Select Jumper "JP5"
ASM 1 (channel 1)	1	EN (Enable)	1	BUL2	FEP1
ASM 2 (channel 2)	2	EN (Enable)	2	BUL2	FEP1
ASM 3 (channel 3)	3	EN (Enable)	3	BUL2	FEP1
ASM 4 (channel 4)	4	EN (Enable)	4	BUL2	FEP1
ASM 5 (channel 5)	5	EN (Enable)	5	BUL2	FEP2
ASM 6 (channel 6)	6	EN (Enable)	6	BUL2	FEP2
ASM 7 (channel 7)	7	EN (Enable)	7	BUL2	FEP2
ASM 8 (channel 8)	8	EN (Enable)	8	BUL2	FEP2
ASM PB1 (mon/playback chan 1)	PB1	DIS (Disable)	PB1	PB	FEP1
ASM PB2 (mon/playback chan 2)	PB2	DIS (Disable)	PB2	PB	FEP2

ASC Card Configuration

There is a 7-by-3 matrix switch to be set up on each ASC card:

	Backup Channel Configuration Jumper "JP1"
Operational ASC Card	position all 7 jumpers to connect left and middle columns
Spare ASC Card	position all 7 jumpers to connect left and middle columns

Cable Label Between DECtalk Card and ASM Card

From	To	Cable Label
1FEP DECtalk 1 "J2" Port	ASM 1 "IN Port"	1-1
1FEP DECtalk 2 "J2" Port	ASM 2 "IN Port"	1-2
1FEP DECtalk 3 "J2" Port	ASM 3 "IN Port"	1-3
1FEP DECtalk 4 "J2" Port	ASM 4 "IN Port"	1-4
2FEP DECtalk 1 "J2" Port	ASM 5 "IN Port"	2-1
2FEP DECtalk 2 "J2" Port	ASM 6 "IN Port"	2-2
2FEP DECtalk 3 "J2" Port	ASM 7 "IN Port"	2-3
2FEP DECtalk 4 "J2" Port	ASM 8 "IN Port"	2-4
1FEP DECtalk 5 "J2" Port	ASM PB1 "IN Port"	1-5
2FEP DECtalk 5 "J2" Port	ASM PB2 "IN Port"	2-5

Cable Label Between DECtalk Card and ASC Card

From	To	Cable Label
4BKUP DECtalk 1 "J2" Port	ASC "BKUP Audio 1" Port	4-1
4BKUP DECtalk 2 "J2" Port	ASC "BKUP Audio 2" Port	4-2
4BKUP DECtalk 3 "J2" Port	ASC "BKUP Audio 3" Port	4-3
4BKUP DECtalk 4 "J2" Port	ASC "BKUP Audio 4" Port	4-4
4BKUP DECtalk 5 "J2" Port	ASC "BKUP Audio 5" Port	4-5

Attachment D

WS Form A-26 Sample

		WS FORM A -26 (4/94)				U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE				Document Number G 49986	
General Information		1. Open Date 4 / 23 / 01	Time 0900	2. Initials JMM	3. Response Priority (check one) <input type="radio"/> Immediate <input type="radio"/> Low <input type="radio"/> Routine <input checked="" type="radio"/> Not Applicable			4. Close Date Time 4 / 23 / 01 1400			
5. Description Expand CRS from a Large 5 to a Large 8 Configuration											
Equipment Information		6. Station ID EAX	7. Equipment Code CRSSA	8. Serial Number 001		9. TM M	10. AT M	11. How Mal. 999			
12. EQUIPMENT OPERATIONAL STATUS TIMES		a. Fully Operational <input type="text"/>	b. Logistics Delay <input type="text"/>	Partly Operational c. All Other <input type="text"/>		d. Logistics Delay <input type="text"/>		Not Operational e. All Other <input type="text"/>			
13. Parts Failure Information										14. Work Load Information	
Block #	a. ASN	b. NSN	c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.	Type	Staff Hrs.		
1								a. Routine			
2								b. Non-Routine			
3								c. Travel			
4								d. Misc.	5:00		
5								e. Overtime			
Miscellaneous Information		15. Maintenance Comments Installed 4 DECTalk cards and 3 ASM cards to expand CRS from Large 5 to Large 8 configuration, I.A.W. Mod Note 52							16 Initials JMM		
17. SPECIAL PURPOSE REPORTING		a. Mod. No. 52	b. Mod./Act./Deact.Date	c.		d.		e.			
18. CONFIGURATION MGMT. REPORTING (use as directed)		ASN		Vendor Part No. (New Part)		Serial Number (Old Part)		Serial Number (New Part)			

Attachment D

D-1

